

Amendment To The Claims

Please cancel claims 1 and 12.

Please amend the following claims as follows:

5. (currently amended) A method of forming a structure on a substrate including at least one interconnect line, the method comprising:
 - a) depositing a first dielectric layer directly on the substrate and directly on the interconnect line such that ~~there is no material layer interposed between the first dielectric layer contacts~~ the interconnect line; ~~and the substrate~~;
 - b) depositing a second dielectric layer on the first dielectric layer, wherein the first and second dielectric layers comprise materials having dissimilar etching characteristics;
 - c) depositing a first mask layer on the second dielectric layer, wherein the first mask layer includes a first via pattern having a width T;
 - d) anisotropically etching the first via pattern through the second dielectric layer;
 - e) removing the first etch mask;
 - f) depositing a third dielectric layer on the second dielectric layer, wherein the second and third dielectric layers comprise materials having dissimilar etching characteristics and wherein the first and third dielectric layers comprise materials having similar etching characteristics;
 - g) depositing a second mask layer on the third dielectric layer, wherein the second mask layer includes a trench pattern overlaying the first via pattern and having a width P, such that T exceeds P;
 - h) anisotropically etching the trench pattern through the third dielectric layer, thereby forming (1) a first trench in the third dielectric layer and (2) a second via pattern;

- i) anisotropically etching the second via pattern through the first dielectric layer, thereby forming a via hole extending to the interconnect line; and
- j) anisotropically etching the first trench through the second dielectric layer, thereby forming a second trench extending through the second and third dielectric layers, wherein the via hole and second trench are adapted for fabricating a dual damascene structure.

6. (currently amended) The method of claim 5 + wherein M is at least 0.02 μ .

7. (currently amended) The method of claim 5 + wherein the first and third dielectric layers comprise one or more dielectric materials selected from the group consisting of amorphous fluorinated carbon, organic spin-on materials, spin-on glass, aero-gel, poly(arylene) ethers, fluorinated poly(arylene) ethers and divinyl siloxane benzocyclobutane.

9. (currently amended) The method of claim 5 + wherein depositing a first mask layer comprises depositing a mask layer selected from the group consisting of ~~photoresist mask layers, hard mask layers and~~ combinations of photoresist mask layers and hard mask layers.

10. (currently amended) The method of claim 5 + wherein the first and third dielectric layers comprise Black DiamondTM.

11. (currently amended) The method of claim 5 + additionally comprising simultaneously filling the second trench and the via hole with a conductive material, whereby a dual damascene structure is formed.

19. (currently amended) A method of forming a structure on a substrate wherein the substrate includes first and second substrate interconnect lines, the method comprising:

- a) depositing a first dielectric layer directly on the substrate and directly on the first and second interconnect lines;
- b) depositing a second dielectric layer on the first dielectric layer, wherein the first and second dielectric layers comprise materials having dissimilar etching characteristics;
- c) depositing a first mask layer on the second dielectric layer wherein the first mask includes: (1) a first via pattern having a width WV1 wherein the first via pattern overlays the first interconnect line, (2) a second via pattern having a width WV2 wherein the second via pattern overlays the second interconnect line and (3) a sacrificial etch pattern positioned between the first and second via patterns such that the sacrificial etch pattern has a width WS;
- d) anisotropically etching the first and second via patterns through the second dielectric layer and forming a sacrificial etch segment by simultaneously anisotropically etching the sacrificial etch pattern through the second dielectric layer;
- e) removing the first mask layer;
- f) depositing a third dielectric layer on the second dielectric layer and in the first and second via patterns that are formed in the second dielectric layer, wherein the second and third dielectric layers comprise materials having dissimilar etching characteristics;
- g) depositing a second mask layer on the third dielectric layer, wherein the second mask layer includes: (1) a first trench pattern overlaying the first via pattern and the third dielectric layer, and having a width WT1 wherein WT1 is narrower than WV1 and (2) a second trench pattern having a width WT2, wherein WT2 is narrower than WV2, overlaying the second via pattern and the third dielectric layer, and having a

distance D between the first and second trench patterns wherein D exceeds WS;

- h) anisotropically etching the first and second trench patterns through the third dielectric layer, thereby forming a first trench and a second trench, additionally forming a third and a fourth via pattern by etching the first and second trench patterns respectively through the third dielectric layer material that is deposited in the first and second via patterns respectively of the second dielectric layer; and
- i) anisotropically etching the third and fourth via patterns through the first dielectric layer, thereby forming a first via hole contacting the first interconnect line and a second via hole contacting the second interconnect line, wherein (1) the first trench and the first via hole are adapted for forming a first dual damascene structure and (2) the second trench and second via hole are adapted for forming a second dual damascene structure.

28. (currently amended) The method of claim 19 wherein depositing a first mask layer comprises depositing a mask layer selected from the group consisting of ~~photoresist mask layers, hard mask layers and combinations of photoresist layers and hard mask layers~~.

Claims Not Being Amended

8. (original) The method of claim 7 wherein the second dielectric layer comprises one or more dielectric materials selected from the group consisting of silicon oxides, silicon nitrides and silicon carbides.

13. (previously amended) A method of forming a structure on a substrate, the method comprising:

- a) forming a dielectric stack including an etch stop layer;
- b) depositing a first mask layer on the etch stop layer wherein the first mask includes: (1) a first via pattern having a width WV1, (2) a second via pattern having a width WV2 and (3) a sacrificial etch pattern positioned between the first and second via patterns such that the sacrificial etch pattern has a width WS;
- c) anisotropically etching the first and second via patterns through the etch stop layer thereby extending the first and second via patterns through the etch stop layer and forming a sacrificial etch segment by anisotropically etching the sacrificial etch pattern through the etch stop layer;
- d) forming a first trench on the etch stop layer such that the first trench does not overlay the sacrificial etch segment and wherein the first trench has a width WT1 that is narrower than WV1;
- e) forming a second trench having a width WT2 on the etch stop layer, such that (1) the second trench does not overlay the sacrificial etch segment, (2) the sacrificial etch segment is positioned between the first and second trenches, (3) the distance between the first and second trench exceeds WS and (4) WT2 is narrower than WV2;
- f) forming a first via hole underlying the first trench, such that the first via hole communicates with the first trench and with the first via pattern extending through the etch stop layer; and

g) forming a second via hole underlying the second trench, such that the second via hole communicates with the second trench and with the second via pattern extending through the etch stop layer, wherein: (1) the first trench and the first via hole, and (2) the second trench and the second via hole area adapted for forming a first dual damascene structure and a second dual damascene structure respectively.

15. (previously amended) The method of claim 13 wherein the distance between the first and second trenches exceeds WS by at least 0.02 μ .

16. (original) The method of claim 13 wherein the etch stop layer comprises one or more dielectric materials selected from the group consisting of silicon oxides, silicon nitrides and silicon carbides.

17. (original) The method of claim 13 additionally comprising simultaneously filling the first and second trenches, and the first and second via holes with a conductive material, whereby first and second dual damascene structures are formed.

18. (original) The method of claim 17 wherein the conductive material comprises one or more materials selected from the group consisting of metals, alloys, metallic superconductors and nonmetallic superconductors.

23. (original) The method of claim 19 wherein the first and third dielectric layers comprise materials having similar etching characteristics.

24. (previously amended) The method of claim 19 wherein D exceeds WS by at least 0.02 μ .

25. (original) The method of claim 19 wherein the first and third dielectric layers comprise one or more dielectric materials selected from the group consisting of

amorphous fluorinated carbon, organic spin-on materials, spin-on glass, aero-gel, poly(arylene) ethers, fluorinated poly(arylene) ethers and divinyl siloxane benzocyclobutane.

26. (original) The method of claim 25 wherein the second dielectric layer comprises one or more dielectric materials selected from the group consisting of silicon oxides, silicon nitrides and silicon carbides.

27. (original) The method of claim 19 wherein the first and third dielectric layers comprise Black Diamond™.

29. (previously amended) The method of claim 19 additionally comprising simultaneously filling: (1) the first trench and the first via hole, and (2) the second trench and the second via hole with a conductive material, whereby first and second dual damascene structures are formed.

30. (original) The method of claim 29 wherein the conductive material comprises one or more materials selected from the group consisting of metals, alloys, metallic superconductors and nonmetallic superconductors.